

islands, tend to show that they possess a purely local character, in perfect harmony with the theory of volcanic formation.

What can now be advanced to support the idea that this peridotite belongs to the schisto-crystalline series? We have stated that a great number of peridotites belong to the schisto-crystalline series, and that in respect of their mode of origin they cannot be separated from the rocks with which they are associated. In the peridotite of St. Paul's Rocks the banded structure, the position assumed by the crystals in the mass, their form, in short, all the peculiarities above-mentioned, are characteristically those of the schists. On the supposition that the rock belongs to the schists, we must suppose an upheaval of the earth's crust to have taken place. The beds, of more or less considerable thickness, which formed, on this supposition, the entire mass in which the peridotite was encased, must have risen above the water, and then being attacked by the erosive action of the waves, the outer portions which covered the peridotites have been disintegrated and removed, leaving behind them as a fragment of the primitive mass what we now see as St. Paul's Rocks. It may thus be supposed that, at the point now occupied by these rocks, there formerly rose a mass of ancient rocks, the dimensions of which may have been successively diminished by mechanical and chemical phenomena. Such an interpretation of the history of the locality is opposed neither to the nature of the rocks, nor to the details, still very incomplete, of their geological structure and relations. It is scarcely necessary to add that the opinion which tends to see in St. Paul's Rocks an outcrop of ancient strata, is not antagonistic to that which assigns to the oceanic basins a constancy in the general disposition, maintained during long geological ages. In regard to the possibility of the existence of a continental mass in the Atlantic at periods not very remote from our own, with which St. Paul's Rocks might be supposed to have been connected, it must be confessed that soundings have shown no trace of it, and that St. Paul's Rocks afford no proof of subsidence. There are no sedimentary formations, either fresh water or marine, to point to a greater extent of land surfaces in former geological ages."

Professor A. Geikie<sup>1</sup> and Mr. M. E. Wadsworth<sup>2</sup> have expressed opinions in favour of the probable volcanic origin of St. Paul's Rocks. To Mr. Wadsworth's criticism on his petrographical determinations, Professor Renard has already replied.<sup>3</sup>

#### ST. PAUL'S ROCKS TO FERNANDO NORONHA.

On the 29th August, at 7 A.M., the ship cast off from St. Paul's Rocks and proceeded round the islets to obtain soundings, leaving an officer on shore to take the bearing of the ship and masthead angle at each cast of the lead, the only method of fixing the correct position of the soundings. Whilst so employed observations were obtained on board with the dipping needle, and in the afternoon the ship was swung by azimuths of the sun to ascertain the deviation. At 3 P.M. the officer on the islet was recalled, and at 6 P.M. sail was made for Fernando Noronha.

On this section four soundings and two serial temperature soundings were obtained (see Sheet 12).

<sup>1</sup> *Nature*, vol. xxvii. p. 25, 1882.

<sup>2</sup> *Science*, vol. i. pp. 590-592, 1883.

<sup>3</sup> *Bull. Soc. Belge de Microscopie*, pp. 165-178, 1883.